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Psychological Resilience in the Face of Terrorism

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Psychological resilience in the context of terrorism was little studied by U.S. researchers before September 11, 2001. Prior to that, the United States had suffered a number of terrorist attacks at home and abroad, including the 1993 bombing of the World Trade Center in New York, the 1995 bombing of the Murrah Federal Building in Oklahoma City, the 1996 truck hombing of a U.S. Air Force barracks in Dhahran, Saudi Arabia, and the 1998 bombings of U.S. embassies in Kenya and Tanzania, among others, each of which would certainly qualify as "terrorist spectaculars" (dramatic, attention-riveting, deadly acts that seize the interest of the media and public; Hoffman, 1999).

However, the impact of the terrorist attacks on New York and Washington, DC, in September, 2001, seemed to be of another order. These events were incomparably and indelibly etched into the national consciousness, and they ushered in a new psychological zeitgeist in U.S. political and personal life. The unique psychological potency of these attacks may be attributable to the searing real-time and repetitive media coverage, the extent of their lethality and breadth of their physical and economic destruction, and the deeply disturbing malignancy of the attacks, which included deliberate assaults on cherished symbols of U.S. economic and military preeminence. This convergence of effects, both tangible and symbolic, tore through any possible cultural membrane of denial, forcing citizens to contemplate existential vulnerability and threat (Becker, 1973; Pyszcznski, Solomon, & Greenberg, 2003) and to consider what might enhance resilience in the face of possible terrorist attacks in the future.

Experts in terrorism (Kaplan, 1981) have observed that such acts are intended to create a *fearful state of mind* in an audience far wider than the immediate victims. In fact, terrorism is "aimed at noncombatants" with the objective of the "deliberate creation of dread" (Stern, 2003, p. xx). Clearly, terrorism is political warfare on a psychological field of battle. And in this modern electronic era of virtually simultaneous mass communication, terrorism's reach (and thus its impact) has extended—everyone with a television or an Internet connection can be witness to a "virtual ground zero" (Butler, Garlan, & Spiegel, 2005). Indeed, in one nationally representative sample, assessed 3–5 days after the attacks (Schuster et al., 2001), each of the 560 people interviewed already knew of the attacks when contacted for the survey (B. Stein, personal communication, January 17, 2005). This development underscores the need to elucidate the effects

of exposure—whether direct or indirect—to terrorism and to identify factors that may allow individuals to be more resilient to such experiences.

The specter of terrorism has another critical aspect. Present distress can stem not only from events that have occurred but also from anticipation of events that may yet occur. As Miller (2002) has observed, "Essentially, terrorism is the 'perfect' traumatic stressor, because it combines the elements of malevolent intent, actual or threatened extreme harm, and unending fear of the future" (p. 296). Acute concern about the possibility of a new attack can be heightened by feelings of unpredictability and baleful inevitability and fueled by past and current experiences of stress or trauma and the anticipated impact of a future event, all telescoped into present fearful preoccupations (Butler, Field, et al., 2005). In the months following September 11, more than half of a large national probability sample reported fears of future terrorism and harm to their families, and a substantial minority continued to report these fears 6 months after the attacks (Silver, Holman, McIntosh, Poulin, & Gil-Rivas, 2002). In fact, Zimbardo and Kluger (2003) have argued that efforts ostensibly directed at the nation's protection, such as the national color-coded warning system, have compounded rather than dispelled distress about future possible attacks, leaving Americans feeling frightened and helpless, a condition they describe as a "pre-traumatic stress syndrome." Thus the effort to understand and promote resilience must confront both adjustment to an attack that has happened and the ongoing management of anxiety in the face of an uncertain future.

Resilience

The 1990s were witness to an important expansion in emphasis on the variety of possible outcomes following traumatic experience. Perhaps not surprisingly, most previous research has focused on the clinically significant end of the distribution—those most affected by the event and the factors that put them at risk for such outcomes. However, in their seminal contributions, O'Leary and Ickovics (1995; see also Carver, 1998) urged researchers to move beyond a vulnerability and deficit model to one that encompasses successful adaptation (resilience) and thriving, and Tedeschi and Calhoun (1995) and others (e.g., Joseph, Williams, & Yule, 1993) began to enumerate the benefits and positive changes that some people report following adversity.

Origins of Resilience Research

The empirical study of resilience originated in developmental research (e.g., Garmezy & Rutter, 1983; Garmezy, Masten, & Tellegen, 1984; Werner & Smith, 1982) and was initially described as "stress resistance" among children at risk for poor outcomes due to genetic or environmental circumstances. "The observation of unexpectedly good development among high-risk children gave rise to the study of resilience, an effort to identify the processes underlying successful adaptation under adverse conditions" (Masten & Wright, 1998, p. 13).

Investigations in two other research streams paralleled these developments. Researchers in lifespan development (e.g., Rowe & Kahn, 1987) sought to identify factors that fostered successful (i.e., quick and thorough) recovery from the challenges of aging. In research on intrapsychic aspects of adaptation, personality psychologists began to identify resilience potentials in the ego resources available to or mobilized by some people under a variety of challenging circumstances (e.g., ego strength, reviewed in Meyer & Handler, 1997; ego resiliency, Block & Block, 1980) and in personalities characterized by traits of hardiness (Kobasa, 1979) and a sense of coherence (Antonovsky, 1987). Both hardiness and coherence involve individual approaches to action and meaning that are associated with physical and psychological health under conditions of stress. The impetus for this research was observations of successful or superior adaptation demonstrated by some individuals who were facing difficult or stressful circumstances. The goal was to discern the intrapersonal and environmental factors associated with such adaptation.

The study of resilience related specifically to *traumatic events* (rather than generally stressful or challenging experiences) began in earnest as the study of traumatic stress got its theoretical and empirical footing, prompted in part by prospective developmental research involving child maltreatment (reviewed in Masten & Wright, 1998), but has since been applied to the range of traumatic experience. In this sense, the study of resilience and thriving is the complement to research on the negative effects of trauma that has flourished in the

past several decades. To understand responses to trauma, the full spectrum of possible outcomes must be considered, along with the factors that may affect those outcomes, including those that increase vulnerability or risk and those that confer protection or enhance resilience.

Functional Outcomes Following Psychological Trauma

In calling for this "paradigm shift" to include positive adaptation among the foci of research, O'Leary and Ickovics (1995; see also Carver, 1998) noted a range of possible functional endpoints following exposure to a traumatic or other adverse life experience (see Figure 25.1, adapted from O'Leary & Ickovics, 1995). Of note, only two of these outcomes are negative; the other two involve maintenance, recovery, and/or enhancement of psychological functioning following a significant life challenge.

In the most dire instance, the individual *succumbs* to the effects of the experience. Based in a health outcome perspective, O'Leary and Ickovics (1995) employ the term *succumb* to describe reduced functioning that ultimately ceases, sometimes following additional postevent decline (Carver, 1998). In the case of a serious psychological challenge, succumbing could also refer, for example, to an event-related deteriorating depression that results in the death of the individual through deliberate suicidal action, physical injury secondary to maladaptive behaviors (such as substance use or recklessness), or possibly direct physical decline.

The second negative outcome—*survival with impairment*—characterizes a postevent diminution in functioning coupled with a failure to return to previous levels over the long term. This is the condition to which much of the traumatic stress literature applies, such as when someone experiences chronic and disabling posttraumatic stress or depression symptoms. In the National Comorbidity Survey (Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995), for example, more than one-third of those who reported an index episode of posttraumatic stress disorder (PTSD) failed to fully recover over the next decade, even among those who had sought treatment for their symptoms.

The third outcome, and the one most commonly understood as *resilience,* refers to "good adaptation under extenuating circumstances" (Masten & Reed, 2002, p. 76) and may be seen in a recovery trajectory that involves a return to baseline functioning following challenge. Resilient people are less vulnerable; they bend rather than break in the face of adversity. Findings from the traumatic stress literature suggest that, despite the fact that most people will face a serious life-threatening or loss event during their lives, the majority will bear few long-term impairments (Kessler et al., 1995; Norris et al., 2002). Indeed, resilient outcomes are

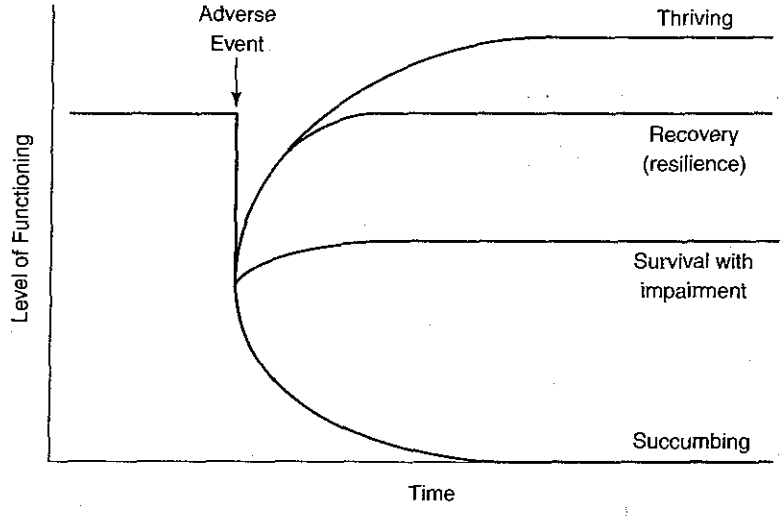

Figure 25.1. Potential outcomes following adversity.

so common that Masten (2001) has referred to the phenomenon in the developmental literature as "ordinary magic."

The final outcome, termed *thriving* (O'Leary & Ickovics, 1995; also known as posttraumatic growth [Tedeschi & Calhoun, 1995]; stress-related growth [Park, Cohen, & Murch, 1996]; or adversarial growth [Linley & Joseph, 2004]), refers to postevent adaptation that exceeds preevent levels. The readjustment experience, in other words, is transformative and represents a "value-added" end state (O'Leary & Ickovics 1995; see also Carver, 1998). Carver has suggested that the term *resilience* should be applied to cases of "homeostatic return to prior condition," while *thriving* should be reserved for cases in which an individual is judged to be "better-off-afterward" (Carver, 1988, p. 247).

In the present chapter, we examine the domain of resilience and factors that may augment or undermine adaptive functioning. While there is no singular way to describe or measure resilience, it can be defined by a set of *outcomes* that involve recovery following challenge. There are also important aspects to the *process* of that recovery that signal or instantiate elements of resilience. In other words, resilience, broadly defined, refers to the fact that an individual recovers and also the ways in which that person responds to the event over time. We believe that this process emphasis allows for a more complete investigation of the means and mechanisms of recovery.

Resilience as Outcome

In the traditional view of resilience as endpoint, Masten (2001, p. 228) has defined resilience as "a class of phenomena characterized by good outcomes in spite of serious threats to adaptation or survival." This view represents a snapshot of outcome interpreted in the context of antecedent circumstances. Consequently, resilience has been variably defined as, for example, achievement in educational and social settings, age-appropriate accomplishments or behaviors, and the presence of desirable outcomes (e.g., well-being, happiness) or the absence of undesirable ones (e.g., mental illness, distress, risky or criminal behaviors; Masten & Reed, 2002). With this emphasis on outcome, research has focused on identifying risk and protective factors that moderate or predict adjustment.

Resilience as Process

Resilience phenomena may also be identified in *trajectories of recovery*. In this way, resilience can connote features of an initial reaction to a traumatic event and characteristics of the recovery path associated with achieving a return to baseline functioning. This is a relatively uncommon research focus, however, as those who report few negative sequelae, uncomplicated recovery, or even enhanced health are generally ignored in the clinical literature because of the (understandable) clinical focus on those suffering the negative effects of a psychological challenge. As Rowe and Kahn (1987) have noted with respect to aging, few distinctions are made within the category of healthy individuals, despite substantial heterogeneity (see also O'Leary & Ickovics, 1995). In addition to the distinction between those who recover and those who thrive, we believe it is important to investigate the varied ways in which people respond and recover.

As Figure 25.2 (adapted from Carver, 1998) illustrates, resilient individuals demonstrate improvement and ultimately recovery following challenge (Lines A–C). Among those who recover, there are presumably differing degrees of resilient adaptation. Those who are most resilient may, for example, react initially with less disruption (Line A) or recover more quickly despite a significant initial setback (Line B compared to Line C). Additionally, some may show an enhanced adaptability in the face of future events (for example, if Line C were the recovery trajectory for the first event and then Lines A or B were observed for the second event)—a result that Carver (1998) conceptualizes as evidence of posttraumatic thriving.

Bonanno (2004) has recently argued that "resilience represents a distinct trajectory from the process of recovery" (p. 20), one in which the person maintains a relatively stable equilibrium, and consequently little or no *recovery* is required, something akin to the "stress resistant" category described in the early developmental literature (Garmezy, 1985). Bonanno's assertion clearly hinges on what "relatively stable" means (which he does not fully specify), and it raises questions about the requirements of the situational challenge that would make it a candidate for a potentially resilient outcome, including the nature of the event experienced, the degree of exposure endured, and the

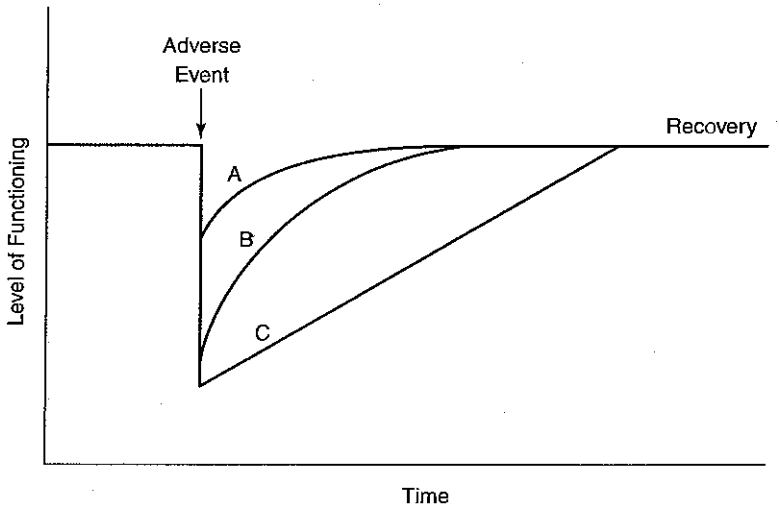

Figure 25.2. Trajectories of recovery.

extent to which the event actually challenged the individual's resources. However, stress resistance is only one among a range of possible resilient adaptations following highly stressful or traumatic experiences, and we believe that it is best understood in the context of this range.

Resilience and Risk in Trauma

In the context of exposure to terrorism or disaster, the risk of distress may be understood as a function of the interplay of a number of factors, among them the individual's personality, demographic, and historical characteristics, the degree of exposure to the event and its aftermath, the level of actual or threatened loss due to the event, initial reactions to the event, and the resources (psychological, social, and material) available to the person both during and following the event. Indeed, an emphasis on the construct of resources in conceptualizing the impact of trauma, as delineated by Hobfoll (1991), may be a useful way of understanding risk and resilience with respect to terrorism. Many of the factors that put people at risk for negative outcomes (e.g., poor premorbid functioning) or that challenge resilience (e.g., significant losses) can be viewed in the context of resource insufficiency or loss, while factors associated with higher resilience (e.g., active engagement, social support) represent resources themselves—both personal and environmental. Many of these resources can be cultivated at any time, so they may be drawn upon in times of need (i.e., when other resources are lost or at risk).

Although little empirical work has been done to examine correlates and predictors of resilience in the context of terrorism, much of the trauma literature generally (and the terrorism and disaster literatures specifically) provide applicable information. In the simplest sense, every finding regarding a poor outcome provides information about who was spared. To paraphrase Masten and Wright (1998), risk (or vulnerability) and compensatory (or protective) factors are often different names for the same continuous variables (e.g., the quality of social support). However, some assets and resources may operate only at the positive end (by their presence; e.g., benefit finding); similarly, there are factors that may harm you if they occur (e.g., a panic attack during a trauma) but do not help you if they do not occur. In this section we briefly review characteristics of the individual known to confer protection or increase psychological risk in the face of trauma.

Characteristics of the Individual

Much research has sought to characterize people who are resilient under conditions of stress (and, in some cases, traumatic stress). In general it may be said that resilience appears to be an interactive process involving beliefs, attitudes, approaches, and behaviors that determine the way the person views and engages the world.

Features of Resilient People

Pioneering developmental research initiated by Emmy Werner and colleagues in the 1950s laid the conceptual groundwork for much of the adult research that was to follow. In her longitudinal study of high-risk Hawaiian children (Werner & Smith, 1982), Werner identified four characteristics of resilient children: (1) They utilized an active problem-solving approach; (2) they employed a constructive approach to perceiving challenging or even painful experiences; (3) they relied on personal faith that maintained meaningfulness in life; and (4) they had the ability to gain positive attention from others.

Echoing the first three of these themes, Antonovsky (1987) proposed that resilient people have a *sense of coherence* characterized by the belief that the events in one's life will be comprehensible, manageable, and meaningful. Comprehensibility assumes an order and explicability to what happens in life. The belief in manageability presupposes that one will have the resources—both personal and interpersonal—to meet the demands of the event. The notion of meaningfulness applies both to finding significance in the adversity and to believing that the challenge is deserving of engagement, even when difficult.

Tedeschi and Calhoun (1995) have noted that these elements may be the keys to successful adaptation to trauma because they are precisely the domains that traumatic experiences challenge. For example, among variables found to contribute to maladaptation following a large-scale traumatic event are violations of existential assumptions about the worthiness of the self and the benevolence and meaningfulness of the world (Janoff-Bulman, 1992). Following the terrorist attacks on September 11, negative changes in existential outlook were strongly associated with higher distress and lower levels a of well-being (Butler et al., under review), while positive changes were associated with self-reported posttraumatic growth (Butler, Blasey, et al., 2005).

Indeed, finding benefits and meaning in the experience appear to be significant in successful adaptation to adversity (Janoff-Bulman, 1992; Taylor, 1983; Tennen & Affleck, 2002), including cancer (e.g., Carver & Antoni, 2004), bereavement (e.g., Davis, Nolen-Hoeksema, & Larson, 1998), and trauma (e.g. Fontana & Rosenheck, 1998). In addition, the construction of meaning may be an active ingredient in the beneficial effects of disclosing trauma through writing (Park & Blumberg, 2002). Although little research has examined personality correlates of these approaches, there is some evidence for an association with optimism (Davis et al., 1998).

Elements similar to those identified by Antonovsky (1987) are also present in Kobasa's (1979) description of *hardiness*, which involves dispositions to commitment, control, and challenge that are associated with better physical and psychological outcomes (see also, Manning, Williams, & Wolfe, 1988). Hardy people are committed to their lives and engage actively in responding to the tasks that confront them; they believe that they can influence events, and they accept change as a challenge (rather than a threat) that can result in benefits. Hardiness has been found to enhance resilience under conditions of traumatic stress (e.g., King, King, Fairbank, Keane, & Adams, 1998).

Additionally, the related constructs of self-efficacy (Bandura, 1982), a sense of mastery (Meichenbaum, 1985) with respect to challenges, and optimism about the future (Scheier, Weintraub, & Carver, 1986) can contribute to resilience. Each involves beliefs that one's skills and actions will have positive effects on circumstances, which may lead to sustained problem-focused efforts and, consequently, improve the odds of success.

More recently, research has begun to examine the role of positive emotions in coping and resilience. Fredrickson (2001) has delineated a broaden-and-build theory, proposing that positive emotions may quiet or even undo negative emotions that narrow response options, while the cognitive broadening that accompanies states of positive emotion may expand the range of thought-action repertoires. In a prospective study examining resilience and positive emotions following the terrorist attacks of September 11, Fredrickson, Tugade, Waugh, and Larkin (2003) found that positive emotions mediated the relationships between ego resiliency (measured prior to the event) and two outcomes: lower depression and greater growth in psychological resources.

The development of resilient personality features may also rely in part on the experience of stressful (but not overwhelming) life events. Rutter (1987) has asserted that successful adaptation in the past may have a "steeling" effect and therefore

increase the likelihood of mastery in meeting future challenges. In other words, "protection develops not through the evasion of risk, but in the successful engagement with it" (O'Leary & Ickovics, 1995, p. 127). This is an eminently plausible prediction, stemming from the developmental literature and related to the notion of stress inoculation (Meichenbaum, 1985), that could have important implications for differentiating trajectories of adaptation to trauma. As yet, the steeling effect has been little studied in the traumatic stress or posttraumatic growth literatures.

It is worth noting that the previously mentioned personality features and approaches can be, at least in theory, learned, cultivated, and practiced. However, research indicates that there are some fixed personal characteristics that also predict outcomes following traumatic experience.

Demographic Factors Associated With Risk and Resilience

Some static individual characteristics, identified in the wider trauma and disaster literatures as risk factors for distress (Brewin, Andrews, & Valentine, 2000; Norris et al., 2002), have also been confirmed in terrorism samples. For example, females and to a lesser extent those of lower socioeconomic status or with less education and those who are middle aged are at higher risk for a variety of negative outcomes following terrorism than are males, those who are affluent and well educated, or those who are older (DeLisi et al., 2003; Galea et al., 2002; Njenga, Nicholls, Nyamai, Kigamwa, & Davidson, 2004; North et al., 1999; Schlenger et al., 2002; Verger et al., 2004). The positive relationship between age and adjustment may be due to the tendency for older individuals to have more experience with stress and coping and fewer drains on coping resources, compared to middle-aged people (Norris et al., 2002).

There are mixed findings in the disaster and trauma literature with respect to ethnicity and marital status. Norris and colleagues (2002) report that in most disaster studies those in the ethnic *majority* group fared best, a finding borne out in some recent terrorism studies (e.g., Schuster et al., 2001; Galea et al., 2002). The findings with respect to marital status sometimes indicate that being married (versus unmarried, divorced, separated, or living alone) decreases risk (Njenga et al., 2004; Verger et al., 2004); however this association may be stronger for men (Norris et al., 2002) and may also, in part, reflect the availability of emotional support.

In addition to personality and demographic characteristics, historical features may also contribute to a person's response to trauma. Their presence may indicate compromised resources or poor learning histories with respect to dealing with trauma, resulting in less resilience when confronted with threat or possible future terrorism. Efforts to bolster resilience in such cases would be especially important.

History of Traumatic Experience

Prior trauma, including both childhood and adult experiences, may reduce one's resilience to later traumatic events. Several studies, for example, have shown that combat-exposed veterans diagnosed with PTSD have higher rates of childhood trauma, such as physical abuse, than combat-exposed veterans without PTSD (e.g., Bremner, Southwick, Johnson, Yehuda & Charney, 1993). Additionally, King and colleagues (King, King, Foy, & Gudanowski, 1996) found that other previous life traumas (e.g., motor vehicle accidents, physical assault, natural disasters) also predicted PTSD in veterans. Prior trauma (such as physical or sexual assault) may also extend risk to women exposed to later trauma (Resnick, Kilpatrick, Dansky, Saunders, & Best, 1993). Similarly, studies following September 11 reported elevations in trauma symptoms, depression symptoms, and general distress among those with histories of trauma (Silver et al., 2002) and stressful life events (Galea et al., 2002). As previously mentioned, research is needed to determine whether there is a subset of people who are actually steeled by these experiences and thus are more resilient (than they would have been otherwise) when faced with later adversity.

Psychological Functioning

Adjustment problems prior to a traumatic event may also predispose one to greater difficulties in coping or further psychopathology, including anxiety, depression, PTSD, neuroticism, and other symptom or personality states. For example, North et al. (1994) found that survivors of a shooting spree with preexisting major depression were at a significantly higher risk for PTSD 1–6 months after the event (see also Schnurr, Lunney, & Sengupta, 2004). Similarly, a number of retrospective studies

of the effects of September 11 found that reports of prior maladjustment were associated with trauma and depression symptoms (e.g., Blanchard et al., 2004; DeLisi et al., 2003; Schuster et al., 2001). Prospective studies (which eliminate the possibility of a retrospective bias in reporting) have found that neuroticism and elevated MMPI clinical scale scores predicted PTSD in veterans (Lee, Vaillant, Torrey, & Elder, 1995; Schnurr, Friedman, & Rosenberg, 1993), and preexisting mental disorders predicted increased trauma symptoms and general distress after September 11 (Silver et al., 2002).

Family Characteristics

Family psychopathology and/or instability have also been found to contribute to psychosocial outcomes following traumatic stress (Ozer, Best, Lipsey, & Weiss, 2003). For example, firefighters with a family history of psychopathology were found to be at greater risk for PTSD 4 months following exposure to massive fires and death (McFarlane, 1988), and premilitary family instability (mental disorder, contact with mental health professionals, substance use) was associated with higher risk of developing PTSD among Vietnam veterans (Schnurr et al., 2004).

Overall, meta-analytic studies have found that prior trauma history, psychiatric history, and family psychopathology make a small but significant contribution to the development of trauma symptoms in both military and civilian samples following subsequent adversity (Brewin et al., 2000; Ozer et al., 2003). These analyses indicate that factors operating during or after the trauma (such as trauma severity, peritraumatic responses, coping, social support, or additional life stressors) tend to have stronger effects on outcomes than do pretrauma factors (Brewin et al., 2000; Ozer et al., 2003). As Rutter (1987) has observed, "resilience cannot be seen as a fixed attribute of the individual. . . . If circumstances change, resilience alters" (p. 317).

Characteristics of the Event

Although unique in many ways, acts of terrorism have much in common with other traumatic events, including features of criminal assaults, disasters, and acts of war (Miller, 2002). Examining the broader traumatic stress literature, the dimensions of traumatic events found to be associated with the poorest outcomes (Green, 1993) may all be present in the experience of a terrorist attack or its aftermath (i.e., a military response): threat to life and limb; severe physical harm or injury; receipt of intentional injury or harm; exposure to the grotesque; violent or sudden loss of a loved one; witnessing or learning of violence to a loved one; learning of exposure to a noxious agent, and/or causing death or severe harm to another. Because event characteristics are significant contributors to outcomes, identifying their harmful features can improve our understanding of the challenge they pose to resilience and indicate where preventative interventions may be aimed.

Direct Event Exposure

Indisputably, those who are *directly* exposed to terrorist acts through threat or injury to themselves, the death or injury of loved ones, or witnessing the death or injury of others, along with those who tend to the injured or recover the dead, face the greatest challenges to their emotional well-being. Findings from around the world, including Ireland, Israel, France (reviewed in Gidron, 2002; Verger et al., 2004), Nairobi, Kenya (Njenga et al., 2004), and the United States (North et al., 1999; Galea et al., 2002) indicate that a sizable subgroup, ranging from 18% to 50% of directly exposed citizen survivors of terrorist attacks, develop posttraumatic stress symptoms indicative of a PTSD diagnosis (with rates typically highest among those most seriously injured). Additionally, disaster research suggests that symptom levels in the early phases of recovery are likely to determine subsequent symptom levels (Norris et al., 2002), highlighting the importance of early intervention. Training and experience in facing such events appear to promote resilience (and may also reflect the previously mentioned steeling effect): Several studies have found much lower rates of PTSD among police officers (Wilson et al., 1997, cited in Gidron, 2002) and firefighters involved in rescue operations (North et al., 2002) following terrorist attacks, although career self-selection is also likely a contributing factor.

The intensity of stressor exposure (often operationalized as proximity) is typically related to outcomes; thus, higher levels of exposure predict greater subsequent distress. Schlenger and colleagues (2002) found that levels of PTSD symptoms were significantly higher in the New York City metropolitan area than in other major cities or the

rest of the country. This association was noted even among those who resided in Manhattan during the attacks: Those living south of Canal Street (the area closest to the attacks) reported significantly higher PTSD symptoms than those living north of this area (Galea et al., 2002; see also DeLisi et al., 2003). The degree of perceived threat, injury, and material losses are each also consistent predictors of traumatic stress symptoms across traumas generally (Brewin et al., 2000; Ozer et al., 2003) and with respect to terrorism (Galea et al., 2002; Njenga et al., 2004; North et al., 1999; Verger et al., 2004).

Indirect Event Exposure

Terrorism is not directed only at those who will experience the attacks firsthand or suffer personal losses due to them, however. Terrorism's magnitude is also gauged by the extent to which the acts terrorize those who are more distant from the events. *Indirect* exposure, particularly through mass media, is the type of exposure that the greatest number of people are likely to experience in the event of future terrorist attacks, as it was in the case of September 11.

Not surprisingly given the ubiquitous media coverage during and after September 11, most studies included media exposure as a variable in their assessments. As predicted, the amount of television viewed during and shortly after the attacks was associated with levels of trauma symptoms, depression, panic, and/or distress in the perievent period and in the following months (e.g., Ahern, Galea, Resnick, & Vlahov, 2004; Schlenger et al., 2002; Schuster et al., 2001), even among those without firsthand exposure or losses. However, the relationship between distress and media exposure has yet to be fully delineated. Some have proposed that TV viewing may represent an effort to cope with distress about the event, rather than a cause of it (Schlenger et al., 2002), while others have suggested that "vulnerable victims may have attempted to use information gathered via television as a coping mechanism but instead ended up retraumatizing themselves" (Kalb, 2002, cited in Miller, 2002). If the latter is the case, then limiting media viewing of such events may be a way of conserving resources and remaining more resilient during and following the event.

Because not everyone who is directly exposed—and some who are only indirectly exposed—suffer adverse consequences, exposure alone does not account for all who will have difficulties. Individual variations in psychological response, approaches to coping, and available social support may also play a role in determining a given person's outcome.

Psychological Responses During and After the Trauma

Individuals respond in very different ways during and immediately following a traumatic event (termed "peritraumatic" responses; Marmar, Weiss, & Metzler, 1997), and these differences can have significant implications for subsequent adjustment (Ozer et al., 2003). The importance of the subjective responses of fear, helplessness, and horror during a distressing event has been demonstrated across a number of traumatic experiences (reviewed in Ozer et al., 2003), including terrorism (Njenga et al., 2004), and their centrality is captured in the DSM-IV (American Psychiatric Association [APA], 1994) diagnostic criteria for acute stress disorder (ASD) or PTSD. However, other psychological reactions during and immediately after a traumatic event may be reported. In one study following the Oklahoma City bombing (Tucker, Dickson, Pfefferbaum, McDonald, & Allen, 1997), peritraumatic hyperarousal symptoms, dissociative reactions, fear for self and family, and feelings of upset about one's own actions or those of others (retrospectively reported) were each significantly correlated with posttraumatic stress symptoms 6 months later.

Peritraumatic Dissociation

One peritraumatic phenomenon is the response of dissociation, which includes altered experiences of self (depersonalization, numbing, feeling dazed) and the world (derealization, particularly time distortion) and episodic memory difficulties (amnesia; Koopman, Classen, & Spiegel, 1994; Marmar et al., 1994; APA, 1994). Although acute dissociation is common in the context of extreme distress (APA, 1994), considerable research indicates that it may herald postevent pathology, including PTSD (reviewed in Ozer et al., 2003). Following the Oklahoma City bombing, dissociative and avoidance symptoms were also strongly associated with psychiatric comorbidity, impairment, and need for treatment (North et al., 1999).

Peritraumatic Panic

Panic is another potential peritraumatic response. Panic attacks occur in 53%–90% of survivors (Nixon & Bryant, 2003; Falsetti & Resnick, 1997) and may persist among those who develop PTSD and even predict that development (Falsetti & Resnick, 1997). Some researchers have proposed that acute panic reactions during a trauma may condition cues that later trigger panic attacks (Falsetti, Resnick, Dansky, Lydiard, & Kilpatrick, 1995), which may explain findings that peritraumatic panic can persist into the postevent period (Nixon & Bryant, 2003). Research following September 11 found that peritraumatic panic was associated with both depression and PTSD (Galea et al., 2002) and with higher levels of television viewing (Ahern et al., 2004), although the direction of the relationships could not be determined.

Peritraumatic reactions may challenge resilient functioning because some (e.g., hyperarousal, panic) may exacerbate the feeling of life threat, while others (e.g., dissociation) may bar access to adaptive behavioral options and coping strategies and impede cognitive processing of the event. Although such reactions are immediate and unbidden during the event, they are important risk factors that may be open to intervention once the acute crisis is over. It is not known what distinguishes those who experience peritraumatic panic or dissociation yet remain resilient. The utilization of personal and interpersonal resources in the early posttraumatic period is likely critical.

Coping During and After the Event

Although many factors can influence the way one responds to a major stressor, a central component in determining variability in psychological outcomes is the manner in which the individual attempts to cope. Coping has been defined as "efforts, both action oriented and intrapsychic, to manage (that is, master, tolerate, minimize) environmental and internal demands, and conflicts among them, which tax or exceed a person's resources" (Cohen & Lazarus, 1979, p. 219). Coping is frequently conceptualized in terms of broad coping styles, often dichotomous, such as approach versus avoidance (Roth & Cohen, 1986), and research has consistently found approach-monitoring-vigilant coping styles to be associated with better outcomes in a variety of situations, when compared to repression-avoidant-blunting styles (Aldwin, 1999; Roth & Cohen, 1986). Dichotomizing coping styles into two broad modalities has both conceptual and psychometric appeal; however, it does not capture the fluctuating and at times alternating nature of coping. For example, Folkman and Lazarus (1980) have found that, in highly stressful situations, there is often vacillation between approach and avoidance in attempts to manage the crisis.

Considerable research has focused on examining the ways in which different coping approaches can help a person minimize or avoid adverse outcomes following a major stressor. Although there may be no one right way to cope with traumatic events initially (Norris et al., 2002), research suggests that some coping strategies are more or less adaptive over time. Substance use, for example, is one way of coping aimed at avoiding or blunting experience or managing aversive feelings associated with trauma, but it has been associated with indicators of poor functioning in this context (North et al., 2002). In contrast, spiritual faith is central to psychological recovery for many following trauma (Tedeschi & Calhoun, 1995), and religious coping was found to be associated with lower levels of distress and greater self-reported growth among survivors of the Oklahoma City bombing (Pargament, Smith, Koenig, & Pérez, 1998).

Problem-Focused Versus Emotion-Focused Coping

Research has also examined problem-focused versus emotion-focused coping (e.g., Folkman & Lazarus, 1980) and found that these coping *styles* are more stable than other ways of conceptualizing coping (Endler & Parker, 1990). Problem-focused coping includes strategies for gathering information and other resources (skills, tools) to help deal with the underlying problem, identifying objectives, planning future actions, making decisions, and resolving conflict. In contrast, emotion-focused coping typically involves managing feelings, sometimes through avoidance, distraction, withdrawal, and disengagement from coping efforts. Emotion-focused coping strategies may be relatively consistent across time, suggesting that some people may have a characteristic way of dealing with their emotions (Aldwin, 1999).

Although people often focus on trying to control their emotions in the grip of a crisis, longer-term adjustment usually requires a more

problem-focused approach, during which the difficulties posed by the stressor can be actively addressed. Problem-focused coping has the potential of resolving or successfully managing the challenge, and active engagement in the situation may minimize the feelings of helplessness often associated with trauma and replace them with an increased sense of control and personal mastery—factors associated with resilience. This may be the reason active or problem-focused coping is typically associated with better psychological outcomes than avoidant coping (Holahan & Moos, 1985; reviewed in Norris et al., 2002). For example, in one study following the Oklahoma City bombing in 1993 (Sprang, 2000), those who reported task-oriented coping indicated significantly lower levels of perceived future risk and feelings of victimization than those who engaged in avoidance or emotion-oriented coping.

However, some coping requirements may be situation specific, particularly when the stressor is uncontrollable and unpredictable (Lazarus & Folkman, 1984), as in the case of dread regarding a possible terrorist attack. A study of coping and terrorism-related anxiety among Israeli bus commuters (Gidron, Gal, & Zahavi, 1999) found that problem-focused coping while commuting (i.e., checking behaviors such as observing other passengers and looking under seats for suspicious packages) was positively associated with anxiety, whereas emotion-focused behaviors (i.e., trying to calm or distract oneself or minimizing the threat) were not. Moreover, analyses indicated that the ratio of use of these different coping strategies was key: Higher levels of problem-focused relative to emotion-focused coping were associated with terrorism distress. Gidron and colleagues suggest that combining minimal problem-focused preventative acts with distraction and reduced perceived vulnerability may be the most beneficial strategy under these circumstances.

Appraisal and Coping

Coping may also be conceptualized as a process that depends on the way a person cognitively appraises a situation. According to Lazarus and Folkman (1984), cognitive appraisals associated with stress may be categorized as harm/loss, threat, and challenge, and these appraisals are influenced by environmental demands and individual beliefs, values, and commitments. Of note, one way in which the personality feature of hardiness may enhance resilience is through its influence on stress appraisal; hardiness has been associated with the minimization of threat, less negative affect, and increased active coping (Wiebe, 1991, cited in Tedeschi & Calhoun, 1995).

Coping Following September 11

Research following the terrorist attacks of September 11 has shed further light on the relationship between coping strategies and psychosocial outcomes such as general distress, PTSD, anxiety, and well-being. In a nationwide longitudinal study examining psychological responses to September 11 (Silver et al., 2002), the use of specific coping strategies in the immediate aftermath consistently predicted psychological outcomes over time. After controlling for demographics, time, and severity of loss experienced in the attack, people who used denial, self-distraction, or self-blame; sought social support; or disengaged from coping efforts had significantly higher levels of distress and/or trauma symptoms, whereas those who engaged in active coping or acceptance reported significantly lower levels of distress and symptoms. In fact, coping strategies shortly after the attacks were the strongest predictor of PTSD and the second strongest predictor of global distress (after prior mental health), with immediate disengagement from coping efforts markedly increasing the likelihood of ongoing distress and posttraumatic symptoms. In this study, active coping was the only strategy that appeared to be protective against ongoing distress (when prior mental health was controlled for). In fact, Silver and colleagues note that the absence of greater numbers of protective coping strategies was surprising.

Interestingly, while the *receipt* of social support is almost always associated with better mental and physical health outcomes (Cohen & Wills, 1985; Ozer et al., 2003), the *seeking* of social support as a coping strategy is almost always associated with poorer outcomes (Monroe & Steiner, 1986), as it was in the study by Silver et al. (2002) mentioned earlier. In many cases, this association may simply reflect the possibility that those who are more distressed (and therefore more likely to have poor outcomes) are more likely to seek support. In the first few days after September 11, those who reported the highest stress levels were significantly more likely to have talked to someone about their feelings at least "a medium amount," as well as

turned to prayer and religion, made donations, and checked on the safety of their loved ones (Schuster et al., 2001) as ways of coping. Seeking out others to talk at least "a little bit" following the trauma was a virtually universal reaction (98%).

Consistent with these overall findings, in another study examining responses after September 11, denial, behavioral disengagement, mental disengagement, and focus on and venting of emotions was predictive of anxiety 2 months after the attacks among indirectly exposed college students, with venting of emotions uniquely predictive of long-term anxiety (Liverant, Hofmann, & Litz, 2004). Similarly, a study examining resilience in an indirectly exposed Internet sample following September 11 (Butler et al., under review) found that higher levels of psychological well-being and/or lower distress in the first few months were associated with less emotional suppression, denial, self-blame, emotional venting, substance use, and seeking of social support; and more active coping and planning. Less self-blame remained a predictor of positive outcomes at 6 months, highlighting the importance of cognitive appraisal and attribution to resilience.

In sum, research suggests that active, problem-focused coping strategies are most likely to promote outcomes of resilience, whereas avoidant, emotion-focused coping strategies contribute to outcomes of distress. In addition, cognitive factors such as appraisal and attribution of blame seem to be important in determining how coping may operate as a protective factor against ongoing distress. In the next section we turn from the domain of intrapersonal resources to those that may be found in the environment, specifically social support.

Social Support During and After the Event

One of the most consistent contributors to recovery and psychological well-being during and following stress or trauma is social support (Brewin et al., 2000; Cohen & Wills, 1985; Holahan & Moos, 1985; Norris et al., 2002; Ozer et al., 2003). Social support's stress-buffering effects (Cohen & Wills, 1985) may reduce the experience or impact of stress and thereby increase the individual's ability to function adaptively in difficult times. In one study following September 11, higher levels of social support in the 6 months *before the attacks* was associated with less attack-related depression and PTSD (Galea et al., 2002), suggesting that having a supportive environment in place enhances resilience directly or by providing assistance to draw on when needed.

One benefit of social contact is that it allows survivors to communicate their experience to others, which may normalize and modulate their emotional reactions through experiencing them in combination with social support (Spiegel, 1999). Conversely, lack of social support (reviewed in Brewin et al., 2000) and the presence of social environments that inhibit direct discussion of the event are clear risk factors for distress, including terrorism-related distress (Butler et al., under review; Wayment, 2004). Communication also requires that the experience be put into words, which may elicit emotional and instrumental social support from the listener, as well as promote cognitive processing through structuring, elaborating, and differentiating the cognitive representation of the experience (Harber & Pennebaker, 1992). Emotional support is typically provided by friends and family, as well as by support and therapy groups, while instrumental support refers to the receipt of practical help from others in accomplishing needed tasks. Ozer and colleagues' (2003) meta-analysis concludes that the beneficial effects of perceived social support (primarily emotional support) may be cumulative or function as secondary prevention following trauma, as these effects are seen more distinctly as time since the event increases.

Personality and Support

Personality factors may influence one's ability to maintain interpersonal relationships following a traumatic event or develop and accept new social supports in the days and months after the incident. Regehr and colleagues (2001) found that firefighters who indicated more *relational capacity* (basic trust in others, less sensitivity to rejection, and ease in making friends) had less severe PTSD and depression. Coupled with cognitive appraisal of social support, these factors accounted for 88% of variance in distress. Similarly, in a study of risk and resilience factors among male and female Vietnam veterans (King et al., 1998), functional social support (the quality of the support, including perceived emotional sustenance and instrumental assistance) and hardiness were directly related to the development of PTSD, while structural social support (the size of the support system) predicted

functional social support. Hardiness also contributed to PTSD outcomes through its relationship to both types of support. That is, hardiness appeared to enhance individuals' abilities to build and utilize social support, and those with more intact, well-functioning support networks exhibited fewer PTSD symptoms.

Community Involvement and Prosocial Actions

Community involvement and altruism are aspects of social contact that may help both the actor and the recipient. Large social networks can provide information and tangible help in managing event-related stressors (Cohen & Wills, 1985), and reaffirming ties to social and religious institutions may provide emotional and spiritual comfort in addition to beneficial community engagement. Indeed, *providing* emotional and instrumental support to others during times of crisis can be as helpful as receiving it (Taylor, Falke, Mazel, & Hilsberg, 1988) and may account in part for the outpouring of prosocial actions (such as donating blood, money, and time) following September 11 (Schuster et al., 2001). Of note is the finding, in a sample without direct connection to September 11, that attack-specific distress (grief, survivor guilt, and intrusive thoughts) was found to be positively associated with collective helping behaviors (e.g., giving blood, goods, or money; volunteering) in the first few weeks following the attacks, and engagement in those activities was associated with greater decreases in grief and survivor guilt over time (Wayment, 2004).

Thus, drawing on social resources during times of crisis is one of the ways people can shore up emotional support and other sources of aid to meet the challenge and cope on an ongoing basis. However, resilience resources may be strained during and following trauma, and the addition of other life stressors in the aftermath of the event can exacerbate difficulties (Brewin et al., 2000; King et al., 1998) and undermine hardiness and the availability of functional support (King et al., 1998), suggesting that a large support network should be developed before the event.

Conclusions

Masten and colleagues (Masten et al., 1999) have noted that, "to study resilience, investigators must specify the threat to [adjustment], the criteria by which adaptation is judged to be successful, and the features of the individual or the environment that may help to explain resilient outcomes" (p. 144). We have discussed the danger to well-being that terrorism (in threat and deed) poses, and we have described possible trajectories of functioning after trauma, with successful recovery representing resilience. We have also identified factors in the empirical literature found to be important contributors to positive and negative outcomes following stress and traumatic stress. Some appear to be risk or vulnerability factors for poor adaptation (e.g., poor premorbid functioning, direct exposure, certain peritraumatic reactions, avoidant coping), whereas others seem to confer protection or enhance one's ability to successfully negotiate the experience without long-term psychosocial disability (e.g., positive attitude and active engagement, previous successes in adaptation, finding meaning and benefits in adversity, problem-focused coping), and still others can either support or undermine resilience depending on their quality (e.g., appraisals, functional social support) or, in some cases, quantity (e.g., structural social support). Not surprisingly, many of these factors are interactive and that must be taken into account (and modeled in analyses) for a full appreciation of the dynamics of resilience to emerge.

Resilience may be seen as an issue of resources: the quality and quantity of psychological and interpersonal assets that can be drawn upon and brought to bear in traversing life's most difficult experiences. Such resources may be circumstantial or dispositional, learned through successes or life's knocks, or provided by supports we have in place or that come to our aid in times of need. However, resources may be limited by experience or situation, and they may be drained, inaccessible, or overwhelmed by traumatic events. Moreover, identifying these resource domains is only a first step in elucidating the underpinnings of resilience.

Clearly, additional research is needed to fully delineate the protective processes and mechanisms that enable resilient functioning and to examine their interrelationships and their effects under conditions of traumatic stress. Rutter (1987) has noted that protective elements include factors that reduce the risk itself or exposure to it; decrease the likelihood of negative chain reactions during and after the event; promote self-esteem and self-efficacy through successful task accomplishment or

social supports; and open up positive opportunities that may change the initial risk trajectory.

However, to date, the majority of research on resilience and risk has been descriptive. Certain personality features, cognitive approaches, coping styles, and social supports appear to contribute to resilience, but little has been done experimentally (with adults) to examine the effects of developing or augmenting these qualities on subsequent long-term adjustment, particularly under conditions of traumatic stress. Rutter has also pointed to the need to identify and specify the parameters of difficult life experiences that ultimately bolster resilient functioning. This could take research into the realm of longitudinal studies examining *trajectories* of adaptation—succumbing, surviving with impairment, recovering, and thriving—and their predictors and mechanisms, rather than simply focusing on functional endpoints.

In their comprehensive review of disaster trauma, Norris, Friedman, and Watson (2002) conclude that distress is most likely when two or more of the following features are present: human perpetrators; intentional violence; high prevalence of injuries; threat to life; loss of life; severe, extensive property damage; and significant, ongoing financial difficulties for the community. All of these conditions are likely to be present in any future large-scale terrorist assault, as they were in the attacks of September 11. Nonetheless, most traumatic events leave in their wake a range of levels of functioning due to differences in exposure to the event and the personal resources that were available and brought to bear on adaptation. We concur, therefore, with Rowe and Kahn's (1987; see also O'Leary & Ickovics, 1995) urging that research examine this range of psychosocial outcomes and undertake the task of explaining their heterogeneity. In doing so, much will be added to our understanding of resilience and to the potential for fostering it in the face of threat and possible future acts of terrorism.

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References

Ahern, J., Galea, S., Resnick, H., & Vlahov, D. (2004). Television images and probable posttraumatic stress disorder after September 11: The role of background characteristics, event exposures, and perievent panic. *Journal of Nervous and Mental Disease, 192,* 217–226.

Aldwin, C. M. (1999). *Stress, coping, and development: An integrative approach.* New York: Guilford.

American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: Author.

Antonovsky, A. (1987). *Unraveling the mystery of health: How people manage stress and stay well.* San Francisco: Jossey-Bass.

Bandura, A. (1982). Self-efficacy mechanism in human agency. *American Psychologist, 37,* 747–755.

Becker, E. (1973). *The denial of death.* New York: Free Press.

Blanchard, E. B., Kuhn, E., Rowell, D. L., Hickling, E. J., Wittrock, D., Rogers, R. L., et al. (2004). Studies of the vicarious traumatization of college students by the September 11th attacks: Effects of proximity, exposure, and connectedness. *Behaviour Research and Therapy, 42,* 191–205.

Block, J. H., & Block, J. (1980). The role of ego-control and ego-resiliency in the origination of behavior. In W. A. Collins (Ed.), *The Minnesota Symposia on Child Psychology, Vol. 13* (pp. 39–101). Hillsdale, NJ: Erlbaum.

Bonanno, G. A. (2004). Loss, trauma, and human resilience: Have we underestimated the human capacity to thrive after extremely aversive events? *American Psychologist, 59,* 20–28.

Bremner, J. D., Southwick, S. M., Johnson, D. R., Yehuda, R., & Charney, D. S. (1993). Childhood physical abuse and combat-related posttraumatic stress disorder in Vietnam veterans. *American Journal of Psychiatry, 150,* 235–239.

Brewin, C. R., Andrews, B., & Valentine, J. D. (2000). Meta-analysis of risk factors for posttraumatic stress disorder in trauma-exposed adults. *Journal of Consulting and Clinical Psychology, 68,* 748–766.

Butler, L. D., Blasey, C. M., Garlan, R. W., McCaslin, S. E., Azarow, J., Chen, X. H., et al. (2005). Posttraumatic growth following the terrorist attacks of September 11, 2001: Cognitive, coping, and trauma symptom predictors in an Internet convenience sample. *Traumatology, 11,* 247–267.

Butler, L. D., Field, N. P., Busch, A. L., Seplaki, J. E., Hastings, T. A., & Spiegel, D. (2005). Anticipating loss and other temporal stressors predict traumatic stress symptoms among partners of metastatic/recurrent breast cancer patients. *Psycho-Oncology, 14,* 492–502.

Butler, L. D., Garlan, R. W., & Spiegel, D. (2005). Virtual 9/11: Managing terror in an electronic era. In Y. Danieli & R. L. Dingman (Eds.), *On the*

ground after September 11: Mental health responses and practical knowledge gained (pp. 575–581). New York: Haworth Maltreatment and Trauma Press.

Butler, L. D., Koopman, C., Azarow, J., Blasey, C. M., Desjardins, J. C., Dimiceli, S., et al. (under review). Psychosocial predictors of resilience following the September 11, 2001, terrorist attacks. Manuscript submitted for publication.

Carver, C. S. (1998). Resilience and thriving: Issues, models, and linkages. *Journal of Social Issues, 54,* 245–266.

———, & Antoni, M. H. (2004). Finding benefit in breast cancer during the year after diagnosis predicts better adjustment 5 to 8 years after diagnosis. *Health Psychology, 23,* 595–598.

Cohen, F., & Lazarus, R. S. (1979). Coping with the stress of illness. In G. Stone, F. Cohen, & N. Adler (Eds.), *Health psychology* (pp. 217–225). San Francisco: Jossey-Bass.

Cohen, S., & Wills, T. A. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin, 98,* 310–357.

Davis, C. J., Nolen-Hoeksema, S., & Larson, J. (1998). Making sense of loss and benefiting from the experience: Two construals of meaning. *Journal of Personality and Social Psychology, 75,* 561–574.

DeLisi, L. E., Maurizio, A., Yost, M., Papparozzi, C. F., Fulchino, C., Katz, C. L., et al. (2003). A survey of New Yorkers after the Sept. 11, 2001, terrorist attacks. *American Journal of Psychiatry, 160,* 780–783.

Endler, N. S., & Parker, J. D. (1990). Multidimensional assessment of coping: A critical evaluation. *Journal of Personality and Social Psychology, 58,* 844–854.

Falsetti, S. A., & Resnick, H. S. (1997). Frequency and severity of panic attack symptoms in a treatment-seeking sample of trauma victims. *Journal of Traumatic Stress, 10,* 683–689.

———, Dansky, B. S., Lydiard, R. B., & Kilpatrick, D. G. (1995). The relationship of stress to panic disorder: Cause or effect? In C. M. Mazure (Ed.), *Does stress cause psychiatric illness? Vol. 46* (pp. 111–147). Washington, DC: American Psychiatric Association.

Folkman, S., & Lazarus, R. (1980). An analysis of coping in a middle-aged community sample. *Journal of Health and Social Behavior, 21,* 219–239.

Fontana, A., & Rosenheck, R. (1998). Psychological benefits and liability of traumatic exposure in the war zone. *Journal of Traumatic Stress, 11,* 485–503.

Fredrickson, B. L. (2001). Positive emotions in positive psychology: The broaden-and-build theory of positive emotions. *American Psychologist, 56,* 218–226.

———, Tugade, M. M., Waugh, C. E., & Larkin, G. R. (2003). What good are positive emotions in crises? A prospective study of resilience and emotions following the terrorist attacks on the United States on September 11, 2001. *Journal of Personality and Social Psychology, 84,* 365–376.

Galea, S., Ahern, J., Resnick, H., Kilpatrick, D., Bucuvalas, M., Gold, J., et al. (2002). Psychological sequelae of the September 11 terrorist attacks in New York City. *New England Journal of Medicine, 346,* 982–987.

Garmezy, N. (1985). Stress-resistant children: The search for protective factors. In J. E. Stevenson (Ed.), *Recent research in developmental psychopathology* (pp. 213–233). New York: Pergamon Press.

———, Masten, A. S., & Tellegen, A. (1984). The study of stress and competence in children: A building block for developmental psychopathology. *Child Development, 55,* 97–111.

Garmezy, N., & Rutter, M. (Eds.). (1983). *Stress, coping, and development in children.* New York: McGraw-Hill.

Gidron, Y. (2002). Posttraumatic stress disorder after terrorist attacks: A review. *Journal of Nervous and Mental Disease, 190,* 118–121.

———, Gal, R., & Zahavi, S. (1999). Bus commuters' coping strategies and anxiety from terrorism: An example of the Israeli experience. *Journal of Traumatic Stress, 12,* 185–192.

Green, B. L. (1993). Identifying survivors at risk: Trauma and stressors across events. In J. P. Wilson & B. Raphael (Eds.), *International handbook of traumatic stress syndromes* (pp. 135–144). New York: Plenum Press.

Harber, K. D., & Pennebaker, J. W. (1992). Overcoming traumatic memories. In S. Christianson (Ed.), *Handbook of emotion and memory: Research and theory* (pp. 359–387). Hillsdale, NJ: Erlbaum.

Hobfoll, S. E. (1991). Traumatic stress: A theory based on rapid loss of resources. *Anxiety Research, 4,* 187–197.

Hoffman, B. (1999). Terrorism trends and prospects. In I. Lesser, B. Hoffman, J. Arquilla, D. Ronfeldt, & M. Zanini (Eds.), *Countering the new terrorism* (pp. 7–38). Santa Monica, CA: RAND.

Holahan, C. J., & Moos, R. H. (1985). Life stress and health: Personality, coping, and family support in stress resistance. *Journal of Personality and Social Psychology, 49,* 739–747.

Janoff-Bulman, R. (1992). *Shattered assumptions: Toward a new psychology of trauma.* New York: Free Press.

Joseph, S., Williams, R., & Yule, W. (1993). Changes in outlook following disaster: The preliminary

development of a measure to assess positive and negative responses. *Journal of Traumatic Stress, 6,* 271–279.

Kaplan, A. (1981). The psychodynamics of terrorism. In Y. Alexander & J. Gleason (Eds.), *Behavioral and quantitative perspectives on terrorism* (pp. 35–50). New York: Pergamon Press.

Kessler, R. C., Sonnega, A., Bromet, E., Hughes, M., & Nelson C. B. (1995). Posttraumatic stress disorder in the National Comorbidity Survey. *Archives of General Psychiatry, 52,* 1048–1060.

King, D. W., King, L. A., Foy, D. W., & Gudanowski, D. M. (1996). Prewar factors in combat-related posttraumatic stress disorder: Structural equation modeling with a national sample of female and male Vietnam veterans. *Journal of Consulting and Clinical Psychology, 64,* 520–531.

King, L. A., King, D. W., Fairbank, J. A., Keane, T. M., & Adams, G. A. (1998). Resilience-recovery factors in post-traumatic stress disorder among female and male Vietnam veterans: Hardiness, postwar social support, and additional stressful life events. *Journal of Personality and Social Psychology, 74,* 420–434.

Kobasa, S. C. (1979). Stressful life events, personality, and health: An inquiry into hardiness. *Journal of Personality and Social Psychology, 37,* 1–11.

Koopman, C., Classen, C., & Spiegel, D. (1994). Predictors of posttraumatic stress symptoms among survivors of the Oakland/Berkeley, Calif., firestorm. *Journal of Consulting and Clinical Psychology, 64,* 1054–1059.

Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping.* New York: Springer.

Lee, K. A., Vaillant, G. E., Torrey, W. C., & Elder, G. H. (1995). A 50-year prospective study of the psychological sequelae of World War II combat. *American Journal of Psychiatry, 152,* 516–522.

Linley, P. A., & Joseph, S. (2004). Positive change following trauma and adversity: A review. *Journal of Traumatic Stress, 17,* 11–21.

Liverant, G., Hofmann, S., & Litz, B. (2004). Coping and anxiety in college students after the September 11th terrorist attack. *Anxiety, Stress, and Coping: An International Journal, 17,* 127–139.

Manning, M. R., Williams, R. F., & Wolfe, D. M. (1988). Hardiness and the relationship between stressors and outcomes. *Work and Stress, 2,* 205–216.

Marmar, C. R., Weiss, D. S., & Metzler, T. J. (1997). The Peritraumatic Dissociative Experience Questionnaire. In J. P. Wilson & T. M. Keane (Eds.), *Assessing psychological trauma and PTSD* (pp. 412–428). New York: Guilford Press.

Masten, A. S. (2001). Ordinary magic: Resilience processes in development. *American Psychologist, 56,* 227–238.

———, Hubbard, J. J., Gest, S. D., Tellegen, A., Garmezy, N., & Ramirez, M. (1999). Competence in the context of adversity: Pathways to resilience and maladaption from childhood to late adolescence. *Development and Psychopathology, 11,* 143–169.

Masten, A. S., & Reed, M. J. (2002). Resilience in development. In C. R. Snyder & S. J. Lopez (Eds.), *Handbook of positive psychology* (pp. 74–88). New York: Oxford University Press.

Masten, A. S., & Wright, M. O. (1998). Cumulative risk and protection models of child maltreatment. *Journal of Aggression, Maltreatment, and Trauma, 2,* 7–30.

McFarlane, A. C. (1988). The aetiology of post-traumatic stress disorders following a natural disaster. *British Journal of Psychiatry, 152,* 116–121.

Meichenbaum, D. (1985). *Stress inoculation training.* New York: Pergamon Press.

Meyer, G. J., & Handler, L. (1997). The ability of the Rorschach to predict subsequent outcome: A meta-analysis of the Rorschach Prognostic Rating Scale. *Journal of Personality Assessment, 69*(1), 1–38.

Miller, L. (2002). Psychological interventions for terroristic trauma: Symptoms, syndromes, and treatment strategies. *Psychotherapy: Theory/Research/Practice/Training, 39,* 283–296.

Monroe, S. E., & Steiner, S. C. (1986). Social support and psychopathology: Interrelations with preexisting disorder, stress, and personality. *Journal of Abnormal Psychology, 95,* 29–39.

Nixon, R. D., & Bryant, R. A. (2003). Peritraumatic and persistent panic attacks in acute stress disorder. *Behaviour Research and Therapy, 41,* 1237–1242.

Njenga, F. G., Nicholls, P. J., Nyamai, C., Kigamwa, P., & Davidson, J. (2004). Post-traumatic stress after terrorist attack: Psychological reactions following the U.S. embassy bombing in Nairobi. *British Journal of Psychiatry, 185,* 328–333.

Norris, F. H., Friedman, M. J., & Watson, P. J. (2002). 60,000 disaster victims speak: Part 2. Summary and implications of the disaster mental health research. *Psychiatry, 65,* 240–260.

———, Byrne, C. M., Díaz, E., & Kaniasty, K. (2002). 60,000 disaster victims speak: Part 1. An empirical review of the empirical literature, 1981–2001. *Psychiatry, 65,* 207–239.

North, C. S., Nixon, S. J., Shariat, S., Mallonee, S., McMillen, J. C., Spitznagel, E. L., et al. (1999). Psychiatric disorders among survivors of the Oklahoma City bombing. *Journal of the American Medical Association, 282,* 755–762.

North, C. S., Smith, E. M., & Spitznagel, E. L. (1994). Posttraumatic stress disorder in survivors of a mass shooting. *American Journal of Psychiatry, 151,* 82–88.

North, C. S., Tivis, L., McMillen, J. C., Pfefferbaum, B., Spitznagel, E. L., Cox, J., et al. (2002). Psychiatric disorders in rescue workers after the Oklahoma City bombing. *American Journal of Psychiatry, 159,* 857–859.

O'Leary, V. E., & Ickovics, J. R. (1995). Resilience and thriving in response to challenge: An opportunity for a paradigm shift in women's health. *Women's Health: Research on Gender, Behavior, and Policy, 1,* 121–142.

Ozer, E. J., Best, S. R., Lipsey, T. L., & Weiss, D. S. (2003). Predictors of posttraumatic stress disorder and symptoms in adults: A meta-analysis. *Psychological Bulletin, 129,* 52–73.

Pargament, K. I., Smith, B. W., Koenig, H. G., & Pérez, L. (1998). Patterns of positive and negative religious coping with major life stressors. *Journal for the Scientific Study of Religion, 37,* 710–724.

Park, C. L., & Blumberg, C. J. (2002). Disclosing trauma through writing: Testing the meaning-making hypothesis. *Cognitive Therapy and Research, 26,* 597–616.

Park, C. L., Cohen, L. H., & Murch, R. L. (1996). Assessment and prediction of stress-related growth. *Journal of Personality, 64,* 71–105.

Pyszczynski, T., Solomon, S., & Greenberg, J. (2003). *In the wake of 9/11: The psychology of terror.* Washington, DC: American Psychological Association.

Regehr, C., Hemsworth, D., & Hill, J. (2001). Individual predictors of posttraumatic distress: A structural equation model. *Canadian Journal of Psychiatry, 46,* 156–161.

Resnick, H. S., Kilpatrick, D. G., Dansky, B. S., Saunders, B. E., & Best, C. L. (1993). Prevalence of civilian trauma and posttraumatic stress disorder in a representative national sample of women. *Journal of Consulting and Clinical Psychology, 61,* 984–991.

Roth, S., & Cohen, L. J. (1986). Approach, avoidance, and coping with stress. *American Psychologist, 41,* 813–819.

Rowe, J. W., & Kahn, R. L. (1987). Human aging: Usual and successful. *Science, 237,* 143–149.

Rutter, M. (1987). Psychosocial resilience and protective mechanisms. *American Journal of Orthopsychiatry, 57,* 316–331.

Scheier, M. F., Weintraub, J. K., & Carver, C. S. (1986). Coping with stress: Divergent strategies of optimists and pessimists. *Journal of Personality and Social Psychology, 51,* 1257–1264.

Schlenger, W. E., Caddell, J. M., Ebert, L., Jordan, K., Rourke, K. M., Wilson, D., et al. (2002). Psychological reactions to terrorist attacks: Findings from the National Study of Americans' Reactions to September 11. *Journal of the American Medical Association, 288,* 581–588.

Schnurr, P. P., Friedman, M. J., & Rosenberg, S. D. (1993). Premilitary MMPI scores as predictors of combat-related PTSD symptoms. *American Journal of Psychiatry, 150,* 479–483.

Schnurr, P. P., Lunney, C. A., & Sengupta, A. (2004). Risk factors for the development versus maintenance of posttraumatic stress disorder. *Journal of Traumatic Stress, 17,* 85–95.

Schuster, M. A., Stein, B. D., Jaycox, L. H., Collins, R. L., Marshall, G. N., Elliott, M. N., et al. (2001). A national survey of stress reactions after the September 11, 2001, terrorist attacks. *New England Journal of Medicine, 345,* 1507–1512.

Silver, R. C., Holman, E. A., McIntosh, D. N., Poulin, M., & Gil-Rivas, V. (2002). Nationwide longitudinal study of psychological responses to September 11. *Journal of the American Medical Association, 288,* 1235–1244.

Spiegel, D. (1999). Healing words: Emotional expression and disease outcome. *Journal of the American Medical Association, 281,* 1328–1329.

Sprang, G. (2000). Coping strategies and traumatic stress symptomatology following the Oklahoma City bombing. *Social Work and Social Sciences Review, 8,* 207–218.

Stern, J. (2003). *Terror in the name of God: Why religious militants kill.* New York: HarperCollins.

Taylor, S. E. (1983). Adjustment to threatening events: A theory of cognitive adaptation. *American Psychologist, 38,* 1161–1173.

———, Falke, R. L., Mazel, R. M., & Hilsberg, B. L. (1988). Sources of satisfaction and dissatisfaction among members of cancer support groups. In B. H. Gottlieb (Ed.), *Marshaling social support* (pp. 187–208). Newbury Park, CA: Sage.

Tedeschi, R. G., & Calhoun, L. G. (1995). *Trauma and transformation: Growing in the aftermath of suffering.* Thousand Oaks, CA: Sage.

Tennen, H., & Affleck, G. (2002). Benefit-finding and benefit-reminding. In C. R. Snyder & S. J. López (Eds.), *Handbook of positive psychology* (pp. 584–597). New York: Oxford University Press.

Tucker, P., Dickson, W., Pfefferbaum, B., McDonald, N. B., & Allen, G. (1997). Traumatic reactions as predictors of posttraumatic stress six months after the Oklahoma city bombing. *Psychiatric Services, 48,* 1191–1194.

Verger, P., Dab, W., Lamping, D. L., Loze, J., Deschaseaux-Voinet, C., Abenhaim, L., et al. (2004). The psychological impact of terrorism: An epidemiological study of posttraumatic stress

disorder and associated factors in victims of the 1995–1996 bombings in France. *American Journal of Psychiatry, 161,* 1384–1389.

Wayment, H. A. (2004). It could have been me: Vicarious victims and disaster-focused distress. *Personality and Social Psychology Bulletin, 30,* 515–528.

Werner, E. E., & Smith, R. S. (1982). *Vulnerable but invincible: A longitudinal study of resilient children and youth.* New York: McGraw-Hill.

Zimbardo, P. G., & Kluger, B. (2003). Overcoming terror. *Psychology Today.* Retrieved January 31, 2006, from http://www.psychologytoday.com/articles/pto-20030724–000001.html.